

REMARKS

Claims 1-18 are pending in the application.

Claim Rejections Under 35 U.S.C. §103

Claims 1-3 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Swartz (U.S. 6,871,786) in view of Correa et al. (U.S. 6,340,114B1).

The present invention is a bar code reader which has a first circuit board on which a photodiode is placed. The photodiode receives light reflected from a bar code. The bar code reader also has a second circuit board on which a processing unit is placed. The processing unit processes the signal output from the photodiode. The position at which the first circuit board is placed can be decided irrespective of the position at which the second circuit board is placed. The first circuit board is placed at a position that is most suitable for receiving light reflected from the bar code.

Swartz et al. describes a bar code scanner having a photodetector and a processor. In column 6, lines 45-56 Swartz et al. states,

“In all of the various embodiments, the elements of the scanner may be assembled into a very compact package that allows **the scanner to be fabricated as a single printed circuit board or integral module**. Such a module can interchangeably be used as the laser scanning element for a variety of different types of data acquisition and printer systems. For example, **the module may be** alternately used in a hand-held scanner, a table top scanner attached to a flexible arm or mounting extending over the surface of the table or attached to the underside of the table top, or **mounted as a subcomponent or subassembly of a more sophisticated data acquisition and printing system**.

Correa et al. describes an imaging system that can read various kinds optical codes. The imaging system includes various circuit boards, optical elements and chassis elements. As indicated in column 7, lines 34-38 of Correa et al.

“A packaged image sensor (12) is located on an image sensor board (14). The image sensor board (14) may also contain image acquisition circuitry associated with the image sensor (12). In a preferred embodiment, the image sensor (12) is an area CCD having a window (16) through which an incident image is received.”

Further, as indicated in column 16, lines 54-57,

“As shown in FIG. 17, electronic signals from a CCD detector 400 pass through various signal conditioning blocks to produce a digital output signal 402 applied to a logic board or circuit of the system.”

Further, in column 16, lines 63-67 Correa et al. states,

“FIG. 18 is a block diagram of a logic circuit board employed in a preferred embodiment of the present invention. The heart of the logic board is a micro processor 410. Digital signals from the imaging sensor circuits are supplied to the microprocessor by FPGA circuit 411.”

Therefore, it would appear that Correa et al. describes a first circuit board and a second a circuit board.

Therefore, Claim 1 has been amended to distinguish it over the prior art. Specifically, claim 1 has been amended to indicate that the first circuit board is placed at a position that is most suitable for receiving light reflected from the bar code using a photodiode to receive that light reflected from the bar code.

Neither, Swartz et al. nor Correa et al. describe using a photodiode to detect light from a bar code. Swartz et al. simply describes using a light detector (111) and Correa et al. describes using a CCD. Further, Swartz does not indicate that the light detector is located on a circuit board placed at a position that is most suitable for receiving light reflected from the bar code. Therefore, claim 1 patentably distinguishes over the prior art relied upon by reciting,

“A bar-code reader comprising: a first arrangement to mount a converting element that receives a light reflected from a bar code and converts the light received to an electric signal; and a second arrangement to mount a processing unit that reproduces the bar code from the electric signal, wherein the first arrangement is a first circuit board and the second arrangement is a second circuit board in which the first circuit board is separate and distinct from the second circuit board and the first circuit board is positioned in the bar code reader so as to optimize the reception of light reflected from the bar code, wherein the position of the first circuit board is placed in the bar code reader irrespective of the position of the second circuit board, wherein the first circuit board is placed at a position that is most suitable for receiving light reflected from the bar code and uses a photodiode installed in the first circuit board to receive that light reflected from the bar code.” (Emphasis Added)

Therefore, withdrawal of the rejection of claims 1-3 under 35 U.S.C. §103(a) as being unpatentable over Swartz (U.S. 6,871,786) in view of Correa et al. (U.S. 6,340,114B1) is respectfully requested.

Claims 4-18 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Swartz (U.S. 6,871,786) as modified by Correa et al. (U.S. 6,340,114B1) as applied to claim 2 above, and further in view of Komizo (U.S. 5,663,552).

Komizo describes a portable information terminal having an image processing function.

On page 6 of the Office Action the Examiner asserts that using a photodiode as a photodetector is well known in the art. However, Swartz does not indicate that the light detector is located on a circuit board placed at a position that is most suitable for receiving light reflected from the bar code. Therefore, under MPEP §2144.03, Applicants request that the Examiner supply a reference indicating that the first circuit board contains a photodiode that is placed at a position that is most suitable for receiving light reflected from the bar code.

Therefore, the Examiner's grounds of rejection is respectfully traversed. Specifically, neither Swartz et al., Correa et al. nor Komizo describe the first circuit board is placed at a position that is most suitable for receiving light reflected from the bar code using a photodiode to receive that light reflected from the bar code. Therefore, independent claim 16 patentably distinguishes over the prior art of record by reciting,

“A method of reading a bar code using a bar code reader that includes a photodiode which receives light reflected from a bar code, a first processor that reproduces a pattern of the bar code from a electric signal, the first processor having a first memory unit; a second processor that reproduces the bar code based on the pattern, the second processor having a second memory unit; and a storage unit that stores a first computer program and a second computer program, comprising: the first processor reading the first computer program from the storage unit, storing the first computer program into the first memory unit, and executing the first computer program to reproduce the pattern; and the first processor reading the second computer program from the storage unit and storing the second computer program into the second memory unit of the second processor, and the second processor executing the second computer program to reproduce the bar code, wherein the photodiode is located on a first circuit board and the first processor, the second processor and storage unit are located on a second circuit board in which the first circuit board is separate and distinct from the second circuit board and the first circuit board is positioned in the bar code reader so as to optimize the reception of light reflected from the bar code, wherein the position of the first circuit board is placed in the bar

code reader irrespective of the position of the second circuit board.” (Emphasis Added)

Therefore, withdrawal of the rejection of claims 4-18 under 35 U.S.C. §103(a) as being unpatentable over Swartz (U.S. 6,871,786) as modified by Correa et al. (U.S. 6,340,114B1), and further in view of Komizo (U.S. 5,663,552) is respectfully requested.

Conclusion

In view of the aforementioned amendments and accompanying remarks, claims, as amended, are in condition for allowance, which action, at an early date, is requested.

If, for any reason, it is felt that this application is not now in condition for allowance, the Examiner is requested to contact the applicants’ undersigned attorney at the telephone number indicated below to arrange for an interview to expedite the disposition of this case.

In the event that this paper is not timely filed, the applicants respectfully petition for an appropriate extension of time. Please charge any fees for such an extension of time and any other fees which may be due with respect to this paper, to Deposit Account No. 01-2340.

Respectfully submitted,

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Enclosure: Petition for Extension of Time